Application No. 10/083,967

AMENDMENTS TO THE SPECIFICATION

In the Specification

Please substitute the following amended paragraph(s) and/or section(s) (deleted matter is shown by strikethrough and added matter is shown by underlining):

At page 22, lines 18-21, please replace the paragraph with the following.

Exemplary embodiments of polymer-inorganic particle composites are described further in copending and commonly assigned U.S. Patent Application serial no. 09/818,141, now U.S. Patent 6,599,631 to Kambe et al., entitled "Polymer-Inorganic Particle Composites," incorporated herein by reference.

At page 28, line 26 to page 29, line 8, please replace the paragraph with the following.

Submicron and nanoscale particles can be produced with selected dopants using laser pyrolysis and other flowing reactor systems. Amorphous powders and crystalline powders can be formed with complex compositions comprising a plurality of selected dopants. The powders can be used to form optical materials and the like. Amorphous submicron and nanoscale powders and glass layers with dopants, such as rare earth dopants and/or other metal dopants, are described further in copending and commonly assigned U.S. Provisional Patent Application serial number 60/313,588 to Horne et al., entitled "Doped Glass Materials," incorporated herein by reference. Crystalline submicron and nanoscale particles with dopants, such as rare earth dopants, are described further in copending and commonly assigned U.S. Patent Application serial number 09/843,195, now U.S. Patent 6,692,660 to Kumar et al., entitled "High Luminescence Phosphor Particles," incorporated herein by reference.

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At page 30, lines 19-29, please replace the paragraph with the following.

As a first example of nanoparticle production, the production of silicon oxide nanoparticles is described in copending and commonly assigned U.S. Patent Application Serial Number 09/085,514, now U.S. Patent 6,726,990 to Kumar et al., entitled "Silicon Oxide Particles," incorporated herein by reference. This patent application describes the production of amorphous SiO_2. The synthesis by laser pyrolysis of silicon carbide and silicon nitride is described in copending and commonly assigned U.S. Patent Application Serial No. 09/433,202 to Reitz et al. filed on November 5, 1999, entitled "Particle Dispersions," incorporated herein by reference. The production of silicon particles by laser pyrolysis is described in an article by Cannon et al., J. of the American Ceramic Society, Vol. 65, No. 7, pp. 330-335 (1982), entitled Sinterable Ceramic Particles From Laser-Driven Reactions: II, Powder Characteristics And Process Variables," incorporated herein by reference.

At page 30, line 30 to page 31, line 10, please replace the paragraph with the following.

The production of titanium oxide nanoparticles and crystalline silicon dioxide nanoparticles is described in copending and commonly assigned, U.S. Patent Application Serial Number 09/123,255, now U.S. Patent 6,387,531 to Bi et al., entitled "Metal (Silicon) Oxide/Carbon Composites," incorporated herein by reference. In particular, this application describes the production of anatase and rutile TiO_2. The production of aluminum oxide nanoparticles is described in copending and commonly assigned, U.S. Patent Application Serial Number 09/136,483 to Kumar et al., entitled "Aluminum Oxide Particles," incorporated herein by reference. In particular, this application disclosed the production of γ-Al_2O_3. Suitable liquid, aluminum precursors with

sufficient vapor pressure of gaseous delivery include, for example, aluminum s-butoxide ($Al(OC_4H_9)_3$). Also, a number of suitable solid, aluminum precursor compounds are available including, for example, aluminum chloride ($AlCl_3$), aluminum ethoxide ($Al(OC_2H_5)_3$), and aluminum isopropoxide ($Al[OCH(CH_3)_2]_3$).

At page 31, lines 11-22, please replace the paragraph with the following.

Furthermore, mixed metal oxide nanoparticles have been produced by laser pyrolysis along with or without subsequent heat processing, as described in copending and commonly assigned U.S. Patent Applications Serial No. 09/188,768, now U.S. Patent 6,607,706 to Kumar et al., entitled "Composite Metal Oxide Particles," and 09/334,203, now U.S. Patent 6,482,374 to Kumar et al., entitled "Reaction Methods for Producing Ternary Particles," and U.S. Patent 6,136,287 to Horne et al., entitled "Lithium Manganese Oxides and Batteries," all three of which are incorporated herein by reference. The formation of submicron and nanoscale particles comprising metal/metalloid compounds with complex anions is described in copending and commonly assigned U.S. Patent Application serial number 09/845,985 to Chaloner-Gill et al., entitled "Phosphate Powder Compositions And Methods For Forming Particles With Complex Anions," incorporated herein by reference. Suitable complex anions include, for example, phosphates, silicates and sulfates.

At page 38, lines 26, to page 39, line 14, please replace the paragraph with the following.

One or more materials within the structures can be an optical material. In particular, one or more optical materials can be incorporated within the structure such that the structure is an

optical structure. Optical structures can incorporate one or more optical devices, that can be used to transmit and or manipulate light within the structure. As used herein, an optical material includes materials that can transmit light, with selected wavelengths, with low loss due to scattering and absorption. In particular, for transmission applications, optical materials have a propogation loss at a particular wavelength in the infrared, visible or ultraviolet of no more than about 20 percent over 1 centimeter, although desirable materials have significantly lower propagation losses. Useful optical materials can be absorbing at some wavelengths and transmitting at other wavelengths. For example, amplifiers materials can absorb in ultraviolet and/or visible and transmit in the visible or infrared. In other embodiments, optical materials emit at desired frequencies upon excitation by absorption or electrical stimulation. Thus, phosphors and the like can be incorporated into polymer-inorganic particle blends. Nanoparticle phosphors are described further in copending and commonly assigned U.S. Patent Application serial number 09/843,195, now U.S. Patent 6,692,660 to Kumar et al., entitled "High Luminescent Phosphors," incorporated herein by reference. In some embodiments, phosphors include a host crystal or matrix and a small amount of activator. Suitable host materials for the formation of phosphors include, for example, ZnO, ZnS, Zn_2SiO_4, SrS, YBO_3, Y_2O_3, Al_2O_3, $Y_3Al_5O_{12}$ and $BaMgAl_{14}O_{23}$. Generally, heavy metal ions or rare earth ions are used as activators.

At page 61, lines 11-22, please replace the paragraph with the following.

As an example, ordered polymers have properties that can promote natural segragation that can be exploited within a self-assembly framework. Ordered polymers include, for example, block copolymers. Block copolymers can be used such that the different blocks of the polymer segregate, which is a standard property of many block copolymers. Other ordered copolymers include, for example, graft copolymers, comb copolymers, star-block copolymers,

dendrimers, mixtures thereof and the like. Ordered copolymers of all types can be considered a polymer blend in which the polymer constituents are chemically bonded to each other. Physical polymer blends may also be used as ordered polymer and may also exhibit self-organization, as described further in copending and commonly assigned U.S. Patent application 09/818,141, now U.S. Patent 6,599,631 to Kambe et al., entitled "Polymer-Inorganic Particle Composites," incorporated herein by reference. Physical polymer blends involve mixtures of chemically distinct polymers.